Listing of the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method of processing particulate material, including the steps of:

supplying the particulate material and a dense medium to a medium dense separator so that the particulate material is separated by the density of the particulate material relative to the density of the dense medium;

monitoring at least two [[a]] parameters related to the density of the dense medium to provide an indication ~~of the separator indicative~~ of a separation value of the material, the at least two parameters selected from the group comprising (i) density of the dense medium, (ii) pressure of the dense medium and particulate material mixture, (iii) the feed rate of the dense medium and particulate material mixture, (iv) overall feed rate of a processing plant having the medium dense separator, and (v) ratio of volume or mass flow rate of dense medium to the volume or mass flow rate of the particulate material;

determining from said at least two parameters ~~an~~ induced values indicative of the separating efficiency of ~~the material that passed through~~ said separator each induced value being a measure of the density of the dense medium;

comparing said induced values with [[a]] predetermined values representative of a required density of the dense medium; and

generating an alarm condition if ~~the~~ one or more of said induced values departs from the predetermined value by a predetermined amount so the density of the dense medium can be adjusted.

2. (Canceled)

3. (Cancelled)

4. (Cancelled)

5. (Currently Amended) The method of claim 1 wherein ~~the step of~~ determining ~~the~~ an induced value comprises determining an induced set of values indicative of the separating efficiency of the material that passed through the device, the step of comparing said value comprises comparing said set of values with a predetermined range for the set of values, and the step of generating the alarm condition comprises generating the alarm condition if the said set of values departs from the predetermined range for the set of values by a predetermined amount.

6. (Original) The method of claim 5 wherein the set of values is in the form of a partition coefficient curve and parameters derived therefrom.

7. (Currently Amended) The method of claim 1 wherein ~~the~~ at least one parameter which is monitored is the actual density of the medium.

8. (Currently Amended) The method of claim 1 wherein ~~the~~ at least one parameter is pressure of the medium and particle mixture which is supplied to the device.

9. (Currently Amended) The method of claim 1 wherein ~~the~~ at least one parameter is the feed rate of the medium and particle mixture supplied to the device.

10. (Currently Amended) The method of claim 1 wherein ~~the~~ at least one parameter is the overall processing plant feed rate.

11. (Currently Amended) The method of claim 1 wherein ~~the~~ at least one parameter is the ratio of volume or mass flow rate of medium to the volume of mass flow rate of the material.

12. (Cancelled)

13. (Original) The method of claim 7 wherein the density of the medium is measured at predetermined time intervals, and for a predetermined time period, the number of measurements at each measured value is determined to produce a cumulative normalised frequency distribution of the length of time the particle spends at each measured density, and said set of values characterising separating efficiency is determined as a medium induced partition coefficient curve and/or a parameter derived therefrom, for example medium induced Ep value (MIEp value) by taking the absolute value of the difference in density at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce an MIEp value which is a theoretical value solely dependent on medium density variations, and comparing the MIEp value with the said predetermined value, or medium induced partition coefficient curve with a predetermined partition coefficient curve.

14. (Original) The method according to claim 8 wherein a pressure induced partition coefficient curve is derived by taking the absolute value of the difference in pressure at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a PIEp value which is a theoretical value dependent on pressure variations and comparing the PIEp value with the said predetermined value, or pressure induced partition coefficient curve with a predetermined partition coefficient curve.

15. (Original) The method according to claim 14 wherein a pseudo PIEp value is used as the PIEp value to avoid the need for calibration.

16. (Original) The method according to claim 10 wherein a feed rate induced partition coefficient curve is derived by taking the absolute value of the difference in feed rate at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a FRIEp value which is a theoretical value dependent on feed rate variations and comparing the FRIEp value with the said predetermined value, or feed rate induced partition coefficient curve with a predetermined partition coefficient curve.

17. (Original) The method according to claim 16 wherein a pseudo FRIEp value is used as the FRIEp value to avoid the need for calibration.

18. (Original) The method according to claim 11 wherein a ratio of medium to material induced partition coefficient curve is derived by taking the absolute value of the difference in ratio at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a MCRIEp value which is a theoretical value dependent on ratio variations and comparing the MCRIEp value with the said predetermined value, or ratio induced partition coefficient curve with a predetermined partition coefficient curve.

19. (Original) The method according to claim 18 wherein a pseudo MCRIEp value is used as the MCRIEp value to avoid the need for calibration.

20. (Currently Amended) An apparatus for processing particulate material, comprising:

means for supplying the particulate material and a dense medium to a separator so that the particulate material is separated by the density of the particulate material relative to the density of the dense medium;

means for monitoring at least two [[a]] parameters related to the density of the dense medium to provide an indication ~~of the separator indicative~~ of a separation value of the material;

~~processing~~ process means for determining from said at least two parameters ~~an~~ induced values indicative of the separating efficiency of ~~the material that passed through~~ said separator each induced value being a measure of the density of the dense medium;

comparing means for comparing said induced values with [[a]] predetermined ~~values~~ value representative of a required density of the dense medium; and

alarm means for producing an alarm condition if one or more of ~~the~~ said induced values departs from the predetermined value ~~set~~ by a predetermined amount so that the density of the dense medium can be adjusted.

21. (Cancelled)

22. (Currently Amended) The apparatus of claim 20 wherein the ~~processing~~ process means ~~is for determining~~ determines from ~~said~~ a parameter an induced set of values indicative of the separating efficiency of the material that passed through the device, the comparing means is for comparing the said value set with a predetermined value set and the alarm means is for producing the alarm condition if the set of values departs from the predetermined value set by a predetermined amount.

23. (Currently Amended) The apparatus of claim 20 wherein ~~the parameter is density of medium, and~~ the monitoring means is for measuring the density of the medium at predetermined time intervals, and for a predetermined time period, and the processing means is for determining the number of measurements at each measured value to produce a cumulative normalised frequency distribution of the length of time the particle spends at each measured density, and for determining said value set as a medium induced partition coefficient curve and/or parameters derived therefrom by taking the absolute value of the difference in relative density at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce an MIEp value which is a theoretical value solely dependent on medium density variations, and comparing the partition coefficient curve and parameters derived therefrom with the said predetermined value set.

24. (Currently Amended) The apparatus according to claim 20 wherein at least one ~~the~~ parameter is feed rate and the processing means is for determining a feed rate induced partition coefficient curve by taking the absolute value of the difference in feed rate at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a FRIEp value which is a theoretical value dependent on feed rate variations and comparing the FRIEp value with the said predetermined value, or feed rate induced partition coefficient curve with a predetermined partition coefficient curve.

25. (Original) The apparatus according to claim 24 wherein a pseudo FRIEp value is used as the FRIEp value to avoid the need for calibration.

26. (Currently Amended) The apparatus according to claim 20 wherein at least one ~~the~~ parameter is pressure and the processing means is for determining a pressure induced partition coefficient curve by taking the absolute value of the difference in pressure at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a PIEp value which is a theoretical value dependent on pressure variations and comparing the PIEp value with the said predetermined value, or pressure induced partition coefficient curve with a predetermined partition coefficient curve.

27. (Original) The apparatus according to claim 26 wherein a pseudo PIEp value is used as the PIEp value to avoid the need for calibration.

28. (Currently Amended) The apparatus according to claim 20 wherein at least one ~~the~~ parameter is material to medium ratio and the processing means is for determining a ratio induced partition coefficient curve by taking the absolute value of the difference in ratio at the 75^{th} and 25^{th} percentiles, and dividing by 2000 so as to produce a MCRIEp value which is a theoretical value dependent on ratio variations and comparing the MCRIEp value with the said predetermined value, or ratio induced partition coefficient curve with a predetermined partition coefficient curve.

29. (Original) The method according to claim 28 wherein a pseudo MCRIEp value is used as the MCRIEp value to avoid the need for calibration.

30-56 (Cancelled)